

CLAIMS

1. A method for operating a cryocooler system comprising:

(A) generating an oscillating gas oscillating at a frequency within the range of from 25 to 120 hertz using an electrically driven pressure wave generator;

(B) reducing the frequency of the oscillating gas using a frequency modulating mechanical resonator to produce lower frequency oscillating gas; and

(C) passing the lower frequency oscillating gas to a cryocooler for the generation of refrigeration.

2. The method of claim 1 wherein the lower frequency oscillating gas has a frequency which is lower than the resonant frequency of the pressure wave generator.

3. The method of claim 1 wherein lower frequency oscillating gas has a frequency less than 30 hertz.

4. The method of claim 1 wherein the lower frequency oscillating gas has a frequency less than 10 hertz.

5. A frequency modulated cryocooler system comprising:

(A) an electrically driven pressure wave generator;

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B) a frequency modulating mechanical resonator for receiving oscillating gas from the pressure wave generator; and

(C) a cryocooler for receiving oscillating gas from the frequency modulating mechanical resonator.

6. The frequency modulated cryocooler system of claim 5 wherein the pressure wave generator is a linear compressor.

7. The frequency modulated cryocooler system of claim 5 wherein the frequency modulating mechanical resonator comprises a piston, mass and a spring member.

8. The frequency modulated cryocooler system of claim 5 comprising a second frequency modulating mechanical resonator wherein the two resonators are positioned in an opposed manner.

9. The frequency modulated cryocooler system of claim 5 wherein the cryocooler is a pulse tube cryocooler.